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Cost-Saving Wastewater Choices

An Exclusive Survey
On Waste Disposal

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February 1987

Vol. 102, No. 2

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Cover photograph by Terri Teague, Atlanta

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Contributing to this month's cover was Insituform of North America, Memphis, Tenn., which provided the sewer pipe with Insituform lining. Also, Combustion Engineering, Stamford, Conn., provided the refuse-derived fuel used for the December cover.

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ACROSS AMERICA

Poverty on the Rise, City Survey Reveals

Poverty-related problems, including hunger, homelessness and a lack of low-income housing, continued to grow in 1986, and cities' emergency assistance for those in need fell far short of the demand, according to a 25-city survey from the U.S. Conference of Mayors' Task Force on Hunger and Homelessness.

More than two-thirds of the survey cities reported the number of poor people increased during 1986, with five saying the number remained unchanged and two reporting decreases in poverty. While more than 60 percent of the cities said they had benefited from the nation's economic recovery, nearly nine out of 10 said the recovery had not helped the hungry, the homeless or other low-income residents.

In all but one of the cities, the demand for emergency shelter increased during 1986, with the average increase being 20 percent. On average, the survey says 24 percent of the demand for shelter went unmet, and facilities in 72 percent of the cities turned away people in need because of a lack of resources.

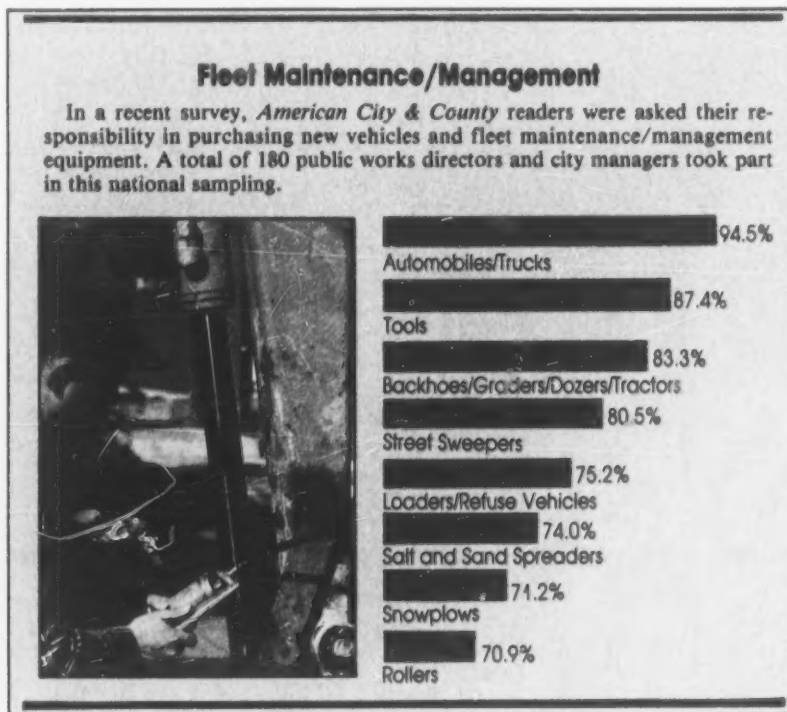
The housing crunch for low-income residents also is on the rise. The demand for assisted housing increased by an average of 40 percent in all but three cities surveyed. In the other three cities, demand remained the same. The average waiting list for assisted housing is 18 months, with the waiting lists closed in two of three cities polled. Less than one-third of the eligible low-income households are being served by assisted housing programs in the 25 cities.

The survey results were announced by Boston Mayor Raymond Flynn, who chairs the task force, and Charleston, S.C., Mayor Joseph Riley Jr., president of the Conference of Mayors. Flynn says if the administration will not help cities provide the services needed, "it is Congress' responsibility to put hunger, homelessness and poverty on its domestic agenda."

Equipment Sales To Remain Steady

North American unit sales of construction equipment will remain relatively stable throughout 1987, maintaining the industry's modest recovery that began in 1983, says John Gleason, JI Case senior vice president, sales and marketing, North America.

Overall sales for 1986 will be up 2 percent over the 84,581 units sold in-



dusty-wide in North America during 1985. (Construction equipment unit sales include industrial wheel tractors, crawler dozers and loaders under 160 hp, wheel loaders under 250 hp, skid-steer loaders, excavators, and trench-

ers.) And although 1987 unit sales are expected to decline slightly, Gleason says the decline will be less severe than the recession of 1980-82.

Public works construction, such as highway and bridge repair, sewer and water lines, and other environmental projects, should remain at or near current levels in 1987, despite federal and state budget cutting, Gleason says.

The 1986 industry growth leaders were excavators and skid-steers. Gleason reports excavator sales industry-wide will be up 16 percent over 1985's record 7,066 units because of the intense price competition that has made excavators attractive alternatives to large loader/backhoes and has stimulated demand for smaller units. Skid-steer loader sales are expected to increase 6 percent over 1985 levels because of the strength of the housing and non-residential construction markets, and a strong livestock industry, Gleason concludes.

CONEXPO '87 Opens in Las Vegas

Construction machinery, accessories, technology and methods will be displayed at the International Construction Equipment Exposition, CONEXPO '87, the once-every-six-year construction equipment exposition, on Feb. 21-26 in Las Vegas, Nev., sponsored by the Construction Industry Manufacturers' Association.

For the first time in the 78-year history of CONEXPO, 36 seminars covering technical subjects, general management information for both contracting and equipment distributors, and marketing and personal development will be offered. Additionally, 30,000 tons of machines and accessories from 280 exhibitors will fill the 900,000-square-foot exposition. For more information, contact Penasholt Inc., 555 Waters Edge Drive, Oak Creek Center, Lombard, Ill. 60148, (312) 953-2300. □

Diverse Activities Mark Engineers Week

Hundreds of activities are scheduled for Feb. 22-28 to celebrate the 37th National Engineers Week, initiated by the National Society of Professional Engineers. The theme, "Engineers: Turning Ideas into Real-

Wastewater Rates Rising As Requirements Increase

With increased environmental and economic attention focused on the wastewater industry, the cost of providing service has increased dramatically during the past decade. The rising costs have translated into much higher user charges to the utility's customers.

Wastewater user charges, which at one time drew little attention from residential and nonresidential customers, have become a more significant part of the customer's budget. In many communities, rates have doubled or tripled due to several factors influencing pricing: upgraded and more sophisticated treatment systems requiring increased operation and maintenance costs; inflation that has made a more significant impact on commodities and services affecting utility operations (chemicals, electricity, salaries, etc.); and requirements to staff treatment operations with more qualified managers and operators.

As a result of these and other factors, politicians and utility managers have

Water/Wastewater Training Program

Public Administration Workshops (PAW) has produced *The Skills to Manage for the Water and Wastewater Professional*, a management training program for public agency personnel. The 12-lesson program discusses motivation, discipline, delegation, negotiation, communication, hiring, firing, time management and financial management. The training program is available for \$89 plus tax and shipping from PAW, P.O. Box 803, Kingsburg, Calif. 93631. □

been forced to examine more carefully wastewater user charges and pricing affecting their communities. These are the primary conclusions gleaned from a recently conducted national survey by Arthur Young and Co. of wastewater departments throughout the country to

determine their rate structures and how those structures are created. This survey targeted the major sewer utilities serving the central cities of the 100 largest metropolitan statistical areas in the United States. A comparison of rates for 20 communities are reviewed in the chart below.

Comparing rates among communities can provide insight into utility pricing policies, survey analysts say, but care should be taken in drawing conclusions from this comparison. High rates may not mean the utilities are operated and managed poorly. Many factors affect the costs to be recovered and the pricing structure. Some of the most prevalent factors are geographic location, demand, level of treatment, level of general fund subsidization, level of grant funding, age of system, customer constituency, infiltration and inflow problems, and rate-setting methodology.

Geographic location and topography significantly affect the design, cost and operation of wastewater facilities. In

1986 National Wastewater Rate Survey

Cities	1/8 Inch Meter				2 Inch Meter	4 Inch Meter	8 Inch Meter
	0 Cubic Feet (0 Gallons)	500 Cubic Feet (3,470 Gallons)	1,000 Cubic Feet (7,480 Gallons)	3,000 Cubic Feet (22,440 Gallons)	50,000 Cubic Feet (374,000 Gallons)	1,000,000 Cubic Feet (7,480,000 Gallons)	1,500,000 Cubic Feet (11,220,000 Gallons)
• Atlanta	\$ 0.00	\$ 6.00	\$12.00	\$36.00	\$ 600.00	\$12,000.00	\$18,000.00
• Baltimore	3.31	8.27	13.23	37.85	322.79	5,432.45	8,276.61
• Boston	0.00	3.60	7.26	22.20	373.50	7,470.00	11,205.00
• Charlotte	1.32	5.32	9.32	25.32	401.32	8,001.32	12,001.32
• Chicago	0.00	0.00	2.84	8.51	141.84	2,836.80	4,255.20
• Cincinnati	8.65	8.65	12.45	27.65	358.20	6,695.20	10,168.20
• Dallas	2.22	5.21	8.20	20.17	219.50	4,340.98	6,510.18
• Denver	2.60	3.80	6.65	20.90	355.30	7,106.00	10,659.00
• Detroit	2.67	5.53	8.39	19.83	291.03	5,734.59	8,605.64
• Indianapolis	5.43	6.28	10.53	25.51	427.24	8,506.00	12,758.00
• Jacksonville	8.80	8.80	26.30	76.30	1,251.30	25,001.30	37,501.30
• Los Angeles	0.00	1.49	2.97	13.71	228.50	4,570.00	6,855.00
• Minneapolis	1.67	5.75	11.50	34.50	575.00	11,230.00	16,680.00
• New Orleans	5.60	9.51	13.66	29.54	425.05	8,107.08	12,296.62
• New York	0.00	1.98	3.96	11.88	198.00	3,960.00	5,940.00
• Philadelphia	11.80	14.56	17.31	28.33	338.83	5,773.33	9,051.67
• San Francisco	0.00	3.24	9.85	39.66	740.02	14,986.25	22,346.90
• Seattle	1.70	9.70	17.70	49.70	801.70	16,001.70	24,001.70
• St. Louis	4.17	5.47	6.77	11.97	134.17	2,604.17	3,904.17
• Washington, D.C.	0.00	8.11	16.21	48.63	810.50	16,210.00	24,315.00

some areas, pumping and transmission costs can be major concerns. A waste treatment plant located far from its discharge stream can have high disposal costs. Another consideration is customer density — in areas where connections are dense, collection costs can be significantly lower than in areas where customers are more spread out.

Customer demand plays an important role in sizing facilities and therefore impacts rates. Facilities have to be designed to provide seasonal and hourly demand, as well as potential growth in the system. Peak demand usage may be

significantly higher than average annual usage. As a result, customers may have to pay relatively higher rates during non-peak periods to have facilities available for peak periods.

A wastewater plant's effluent quality standards are established by the state and identified in the plant's National Pollution Discharge Elimination System Permit. These standards are influenced by the water quality of the discharge stream, as well as the pollutants treated. The level and type of wastewater treatment influences wastewater treatment design and related operating and capital

costs. Communities with tertiary treatment typically would incur greater costs than communities served by secondary facilities.

General fund subsidization and grant funding also can impact the rate structure. General fund assistance might take the form of personnel services, purchasing, administration, accounting and data processing. And with grants, each area may have a different level of projects eligible for funding, and some states supplement federal funding with a state match. As a result, the local share can be significantly different from

Privatization Working in Auburn

Today, barely two years after Auburn, Ala., became one of the nation's first municipalities to enter into a privatization agreement for its wastewater treatment system, how is privatization working? Auburn Mayor Jan Dempsey has a ready answer. "It's working very well. All our expectations are being met."

The 25-year, \$25-million agreement between the city of Auburn and Metcalf & Eddy, involves two new treatment plants (5.4 mgd and 1.6 mgd) and 25 miles of intercepting sewer. The larger of the two plants was put on line in December 1985, nearly 50 percent ahead of schedule, while the second plant went on line in July 1986. Both plants achieved compliance with federal discharge permits immediately upon startup.

The privatization decision by city officials in April 1984 was the culmination of more than 12 years of work to resolve, through traditional funding channels, the replacement of two 30-year-old plants unable to achieve consistent compliance and meet the demand of Auburn's growing population. Despite the city's efforts, Auburn remained low on Alabama's priority list for shrinking federal funds.

The city was left with two alternatives. "We could have financed the majority of the treatment system ourselves and waited for the rest in federal funds," City Manager Doug Watson explains, "or we could have gone with privatization. Privatization made better financial sense."

"We saw the financial advantage to having a private company fund the project," says Watson, "simply because the private partner could take advantage of tax benefits and construction methods that were not available to municipalities. Additionally, we were able to reserve our debt capacity for other uses. Overall, our investigations projected a 30 percent savings to Auburn over the 25-year contract through privatization."

Cost savings were the most important factor in Auburn's decision to privatize, but an added benefit, according to Dempsey, was the rapid startup of the facilities. "We wanted those plants to be up and operating as quickly as possible for several reasons. First, we didn't want to endanger our streams and water sources; and second, we didn't

want to discourage the active development that was underway in Auburn. Privatization promised to have the plants operating more quickly than through another financing method."

A critical concern of municipal officials was the quality of the treatment plants to be designed and built. "It is important to remember that we weren't trying to find a 'cheaper' plant," Watson says, "We were trying to find a way to build and operate the top-quality plants we needed at the most economical cost and in the least time."

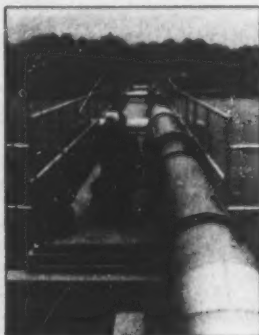
Dempsey adds a final benefit. "The project has freed the time of city officials for other duties. That becomes very important. Now Auburn has professional engineers and operators with full, contractual responsibility for the operation and maintenance of those plants. Instead of city officials trying to understand what plants need and how they work, we can devote our time to other responsibilities that I don't feel are appropriate for contracting out. Dealing with the treatment plants was a time-consuming headache and one we are happy enough to be rid of."

When asked if there was any public opposition to the project, Watson says, "Sometimes someone gets upset because sewer rates have increased as a result of privatization, but when we explain that the choice was to have the rates double under this program or triple if we funded the project ourselves, people tend to back off."

The contract operations agreement terminated in July 1986 with the startup of the second new plant, resulting in an unexpected benefit to the city. In August, city officials accepted \$35,271 from its contract operations partner to be used in part for developing a new park on the site of one of the abandoned treatment plants.

Despite the benefits realized by Auburn, Watson urges other municipalities to proceed with privatization plans carefully. "I definitely recommend privatization to other municipal officials. It has proven an excellent choice for us, from both a time and financial standpoint. But I caution municipal officials to move ahead with those plans carefully."

"From the beginning, trusted financial and legal advisors should be incorporated in the investigations to make sure the municipality's best interests are protected. Second, great care should be taken in selecting a private partner that has demonstrated its ability to deliver what it promises and to be around in the future," he says. "Finally, the municipal officials have to keep the public informed about the proposal, what it means, how it will work, and what it will cost. It's a new concept, and people will need to be informed of the alternatives and the benefits of each option." □



A wastewater sample is taken from the aeration basin.

community to community, and rates will be impacted accordingly.

Typically, older systems require more maintenance, but an extraordinary amount of maintenance may be required with new treatment systems to work out the "bugs." Also with a new system, significant debt service costs may be required as compared with older systems where debt has been repaid or the debt is based on much lower historical dollars. The age of the system then should be evaluated to determine operating and capital revenue requirements, and the effect on rate comparisons.

The types of customers served by a wastewater system affect administrative, customer, treatment and transmission costs. In communities with numerous high-volume users, these costs can be relatively low. On the other hand, areas with high industrial discharge can incur significantly more operating and capital costs.

A major problem with many wastewater systems is the level of infiltration and inflow present. A high level means additional capacity requirements and related operating costs.

The methodology used by a community to establish rates influences the level of revenue requirements to be recovered and the distribution of costs to classes of water and wastewater customers. If the "cash needs" approach to rate setting is followed, cash requirements for utility operations are recovered through the rate base. If the "utility" approach is used, accrual revenue requirements are recovered through the rates.

The major difference is the handling of capital costs. Under the cash needs approach, debt service with related cash requirements and other capital cash outlays are recovered through the rates. Under the utility approach, depreciation and rate of return are recovered through the rates. In a climate of significant grant funding, capital recovery requirements could be significantly different under the two approaches.

Other rate-setting methodologies that would influence rates are the uniform rate approach where each unit of service is charged at the same price; the declining block structure, where higher usage levels gain a per-unit rate advantage; and the inverted block structure that charges higher rates for higher usage.

Survey analysts suggest care be taken in drawing conclusions on the rate structures of various communities. Comparisons among communities could signal to management, however, that there should be reasons why one community's rates are higher or lower than another's. Analysis into why there is a difference could be helpful in examining the effectiveness of a wastewater operation. □

Sewer Mini-Projects Succeed in Lexington

by Robert D. Wiseman

Until recently, Lexington-Fayette County, Ky., installed neighborhood sanitary sewers as government-planned, constructed and bond issue-financed projects. Each property was assessed a portion of the total design and construction costs, based on a formula utilizing front footage and property values.

Bond projects, however, are hampered by cumbersome legal processes, including required ordinances, public hearings and limited time frames. To provide an alternative to the long, complicated process, the county has assisted neighborhood leaders since 1980 in constructing sewers themselves as "mini-projects."

A mini-project is a cooperative neighborhood venture in which a group of property owners forms an association to privately contract the design and construction of collector sewer lines according to city and state guidelines. These neighborhood projects are usually less costly and completed faster. Also, mini-projects are less formal than bond projects, actively involving citizens in neighborhood decision-making. Basic construction, materials and inspection are the same under either method, the fundamental difference being project management and financing.

To the citizen, the real issue in sewer construction is cost. Under the bond method, Lexington-Fayette County has found main-line sewer construction costs as much as \$4,000 per property, while mini-projects have built the same for \$500 to \$1,000 less per property. Homeowner participation can reduce costs by small percentages in different areas, adding up to substantial overall savings. For example, since a bond is not issued, a 1 percent reduction in legal and financial advisor fees is realized. Similarly, administrative and project management time and expenses are donated by citizens, saving money the county would have charged to the project. Incremental savings also can be found in engineering fees, easement costs and unrestrained bidding for private contracts.

Once a neighborhood in Lexington-

ton-Fayette County decides to initiate a mini-project, many steps are involved in bringing the project from consensus to construction. In the process, the neighborhood and the county share the responsibility of project management. A petition with 70 to 80 percent of the affected homeowners is presented and the county discusses the bond issue vs. mini-project methods at a neighborhood meeting.

The homeowners vote and if they choose a mini-project, a neighborhood association, with an executive committee, is elected to oversee the sewer design and construction. Once organized, the association bills each benefiting property owner for an engineering fee that covers design only. The executive committee submits the final design to the county for approval. If the design complies with the general master sewer plan for the area, as well as local construction standards, the association can begin accepting bids for sewer construction.

While mini-projects have certain advantages over traditional government bond projects, there have been negative aspects as well. Bond-issue programs give citizens an option of financing sewer construction over 20 years instead of putting the money up front. But in a mini-project, residents who may not be able to pay immediately are bound without choice to the privilege fee. Also, neighborhood consensus on design and construction is time-consuming. Finally, from the government perspective, overseeing and inspecting the neighborhood committee's progress and decision-making may be difficult.

In Lexington-Fayette County, however, almost 2,000 homes have installed sewers under the mini-project method. The county now offers neighborhoods the mini-project option formally before any legally binding action is taken on a bond project. □

Robert D. Wiseman is urban services coordinator for the Department of Public Works, Lexington-Fayette County, Ky.



Waste Disposal Issues Surveyed

In an exclusive Delphi poll, solid waste authorities confront such major issues as dioxins, landfills, recycling, resource recovery and privatization.

By Stephen Schwarz and Merlin J. Shelstad

As America switches from a smokestack to a service economy, one form of U.S. output does not fall — consumer discards of solid waste, which continue to set new annual records.

The sheer physical size of this mountain of garbage — an Everest of unwanted and difficult-to-dispose-of ma-

terial — is enormous. Municipal solid waste is both combustible and incombustible, biodegradable and possessed of a half-life extending to eternity. Its annual total is estimated to be 228 million tons or, at 25 pounds to the cubic foot, 18 billion cubic feet of waste — a mile-square pyramid rising to a height of more than 2,000 feet, or an area of

654 square miles, 10-feet deep in waste. These overwhelming numbers combine with a growing awareness of solid waste's environmental impact to cast a very long shadow over American life.

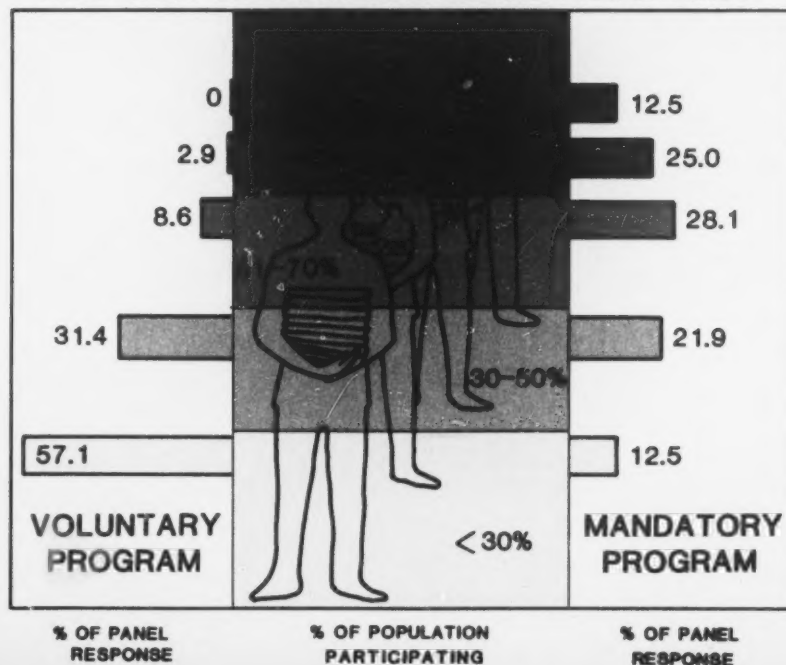
In an effort to divide where this shadow ends and the future begins, Malcolm Pirnie Inc., a consulting engineering firm that in an ongoing program, previously has polled industry leaders on other critical environmental topics, conducted a Delphi poll on the future issues of solid waste management.

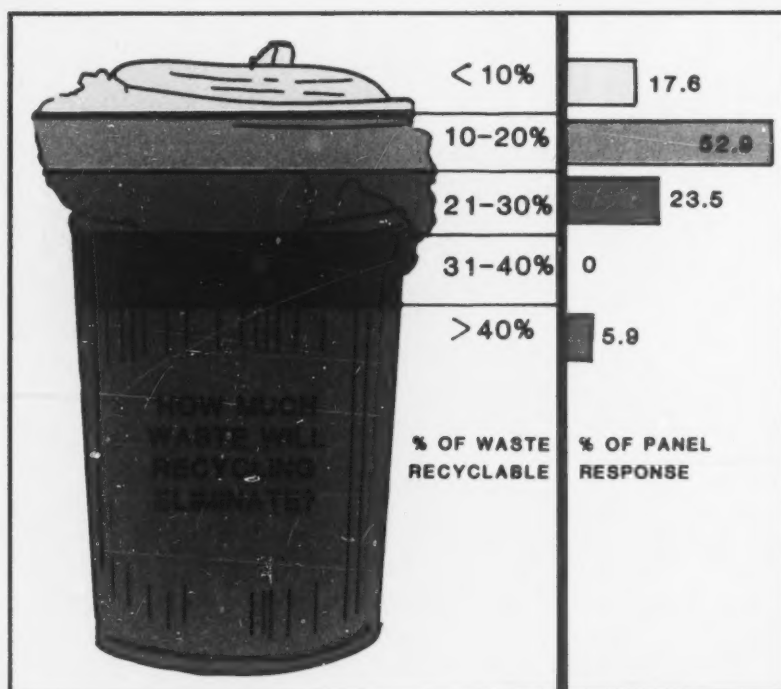
This polling technique, named for the mythological Oracle of Delphi, was developed by the Rand Corp. as a structured method of soliciting expert opinion. Using the Delphi approach, the firm contacted 39 recognized authorities in the solid waste arena, from 18 states and the District of Columbia, representing all segments of the solid waste field — municipal, state and federal agencies, legislators, vendors, consultants, industry associations and academicians.

The Delphi process began with panel members responding to open-ended, essay-type questions. Based on their responses, a second round of questions was formulated, the answers to which then were used to develop a final questionnaire. The technique is designed to uncover the issues of greatest concern to the panelists, rather than predisposing them to comment on specific subjects.

Results of this three-step process in the current Delphi poll eventually focused on several key solid waste man-

WHO WILL SUPPORT RECYCLING PROGRAMS?





agement issues: dioxin, recycling, the private sector's role, toxic waste in landfills, and resource recovery technology.

The most clearly defined area of agreement in the survey dealt with dioxin. Surprisingly, the respondents agree almost unanimously the public faces much less risk from dioxin emissions by waste-to-energy plants than from other, more common sources of carcinogens, such as cigarettes or charcoal-broiled meat. In fact, landfills, with a potential for groundwater contamination, are seen as a greater health hazard by about three-fourths of the respondents.

Based on the experience with resource recovery in Europe, where waste-to-energy plants have been in operation for more than two decades, almost two-thirds of the panel (63 percent) see no evidence that dioxins cause health problems.

Poll respondents, however, agree more information is needed. Fewer than one-third of the panelists say there are enough data on dioxins to fully assess the health risks of resource recovery, with nearly 49 percent agreeing more research on the health risks of dioxins is needed.

Even if a health threat exists, most see it as insignificant. Several say much of the furor over dioxin emissions stems from vocal opponents to resource recovery projects. "The very word dioxin," according to one participant, "creates an emotional response among the general public, and this can turn citizens into pawns for people and groups who are opposed to resource recovery

facilities for a variety of reasons." Panic over dioxin is created by so-called science or public interest organizations that "use poorly founded scientific papers, misquoted data and deceptive methodology to give their claims some substance."

A slightly different emphasis was given by a Midwestern municipal official who comments, "The public is well informed of myths, but few facts. Facts can be and usually are dull reading for the general public."

A more conciliatory tone toward those opposed to resource recovery because of the dioxin issue was taken by a high-ranking state official, who notes, "While debate is raging among the world's scientists, it is unwise and incorrect to characterize dioxin as a non-issue." Among those opting to continue research in the field, one municipal official writes, "It is extremely important to expand efforts to test emissions from existing facilities and to get good, solid scientific evidence before the public."

Panelists, however, show little confidence in the public's ability to judge the dioxin issue rationally. "The average citizen judges environmental issues on an emotional level and is incapable of comprehending the technical arguments of the dioxin issue," according to 73 percent of the panelists.

Even if future research indicates dioxin emissions are not a health hazard and those facts are presented to the public, 77 percent of the respondents say many years would pass before the public changed its views. Panelists are almost equally divided, however, on the proposition that the public expects

"zero" risk from environmental facilities regardless of cost.

Is the dioxin issue being used as an excuse for obstructing resource recovery plants? The panel also was nearly evenly divided on that question. One vendor says there is "no doubt that anti-incineration forces will be active for awhile, but unless they find an alternative to resource recovery other than landfill, they will eventually lose their clout."

An allied point of view was expressed by a government official from the Northeast, who warns, "Concern for dioxin emissions should not be confused with the dioxin scare raised by some opponents to further their true goals of stopping 'capital intensive, high-tech' facilities in favor of major recycling activities. No amount of technical research and data will sway these opponents because dioxin emissions are simply a tool to sway public opinion against major new facilities."

The news media are not a constructive force in the public discussion of dioxin, according to participants. Some 83 percent indicate news coverage on the issue is neither balanced nor factual.

Is America ready for recycling? Since the environmentally conscious 1970s, the concept has been tried with varying degrees of success in communities throughout the nation. To avoid the costs of waste processing, many communities are considering source separation programs in which households separate their wastes by type, such as plastics, glass, metals and newspapers, prior to collection. Delphi panelists were asked whether the typical U.S. citizen is ready for a real source separation program, and of those answering, 69 percent say "no."

The most frequently cited reason for their belief is: Americans have become a "throw-away" culture, prefer convenience and will not go out of their way to separate wastes.

Without public education, panelists did not foresee heavy participation. According to a majority of respondents, public participation would be less than 30 percent in a voluntary recycling program. The good news is 63 percent of the panelists believe a public education program on the benefits of source separation would substantially increase participation in recycling programs.

As to how to implement source separation, three-fifths agree citizens would participate in a source separation program if there were curbside pickup, but not if they have to take cans, bottles and newsprint to a recycling center.

Participation would improve if a recycling program were mandatory, according to most respondents, but the panel is evenly divided about whether the "carrot" or the "stick" approach

would be more effective in getting most Americans to separate their trash. By better than a two-to-one margin, the panelists indicate cash incentives (a 5-cent return deposit on a bottle or can) would be more effective than monetary penalties (a \$500 fine, for example).

Panelists did support the concept of "bottle bills," with 57 percent agreeing 5 cents is sufficient economic incentive to make bottle and can recycling successful. As one participant says, "Economics is the key to recycling. What

Americans won't do for the environment, they will do for money."

The panel is split on whether large-scale recycling could be implemented in the United States only in national emergencies. The participants say socio-economic factors influence cooperation with source separation. Recycling, according to a preponderance of the panelists, appeals mainly to college-educated, middle- to upper-class citizens.

On the other hand, respondents do not write off the possibility of source

separation in large urban centers, which are demographically diverse. More than half agree source separation will work in large cities, such as New York, Chicago, and Philadelphia. Finally, about half of the respondents say public works directors and consulting engineers underestimate the extent to which citizens would cooperate.

Not every participant in the poll says recycling makes sense. Several say there is no economic incentive because virgin materials are abundant and cheap. Others say market prices for recovered materials fluctuate too wildly. Significantly, however, only 29 percent say materials separation and recycling will not make economic sense within 15 years.

Landfilling, toxic waste

There has been much discussion recently forecasting the imminent demise of landfills. While a strong consensus is lacking among the panelists on whether landfilling will continue to play a primary role in "raw" unprocessed waste disposal, in a long-term view, about half say landfills will continue to be used.

Landfilling regulation was another subject considered by the panel. Some 86 percent agree regulations should be flexible to reflect site-specific conditions. However, when asked if landfill regulations should be less strict for small communities because they cannot afford the costs of compliance, the entire panel says "no" — a rare instance of consensus.

Existing laws are not enforced adequately by state agencies, according to 69 percent of the panelists. Moreover, the panelists are unanimous in acknowledging politics as a reality in landfill regulation, and 89 percent agree politics play a significant role in landfill permitting or closure decisions.

The issue of hazardous wastes, such as pesticides and cleaning fluids entering landfills in small quantities, along with wastes from households and small generators, concerns some panelists. Although they are divided evenly over whether small amounts of household hazardous wastes have significant environmental impacts at landfills, 94 percent agree that greater attention should be given to monitoring waste brought to municipal landfills to reduce the intake of toxic or hazardous material.

The growing role of the private sector in solid waste management, compared with the public sector, also was examined by the panelists. By a six-to-one margin, participants see this trend continuing.

Reasons most frequently cited are the private sector's ability to control labor costs and more competent management. In addition, 63 percent agree the private sector is better equipped to deal

Cobb County Reduces Litter With Cooperative Campaign

By Teresa DeFranks, Editorial Assistant

Working together, the Cobb County, Ga., Solid Waste and Corrections departments and the Cobb Clean Commission have reduced litter in the county by 69 percent in 18 months. This combination of resources and results earned Cobb the *American City & County* 1986 Award of Merit, solid waste division.

The partnership was organized by the Cobb Clean Commission, a volunteer litter watch-dog program affiliated with Keep America Beautiful.

"The Cobb Clean Commission is a new department in Cobb," explains Nancy Bickley, Cobb Clean Commission executive coordinator. "When we began two years ago, we didn't have a volunteer base (for the cleanup programs). We needed people; so, we went to the Corrections Department."

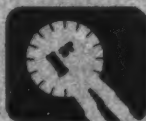
On weekends, participants in the Community Service Alternative to Incarceration (CSAI) program concentrate their litter removal efforts on the primary target areas predetermined by the Cobb Clean Commission. Under the direction of the Solid Waste Department, CSAI participants search collected loads of illegally dumped trash for clues that might indicate point of origin.

Bob McIntyre, Cobb Solid Waste Department director, says discarded mail, check stubs, or envelopes with names and addresses can be utilized to track trash to its source. "Once the owner is identified, he is notified by mail of the county's ordinance regarding improper disposal of solid waste," says McIntyre.

"The goal of this program is to keep Cobb clean, reduce litter and

increase community awareness about who is responsible for the litter," McIntyre continues. "The partnership works because the Cobb Clean Commission brings the problem to the attention of homeowners and others in the county. They are out there cleaning, not just complaining."

McIntyre says the only costs incurred by the county for this program are the cost of uniforms and

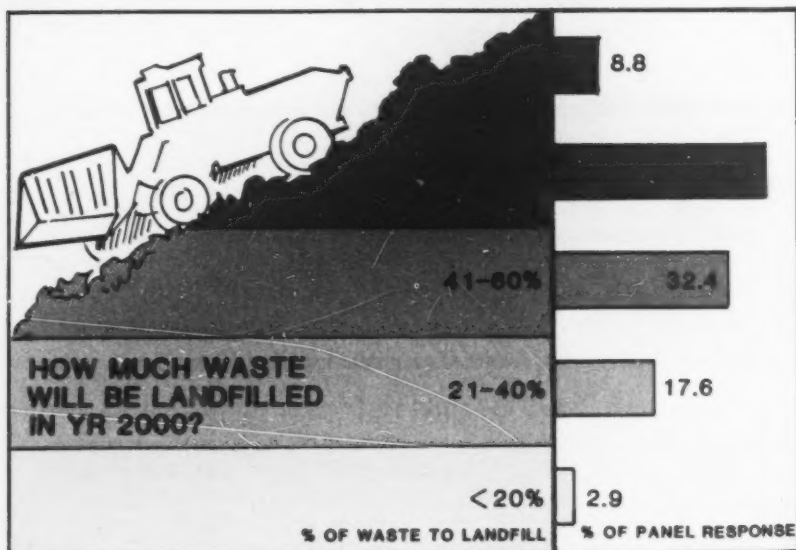


**Award
of Merit**

safety equipment for the CSAI participants, and trash bags.

The county's litter reduction is assessed annually by the American Public Works Association's photometric index, which measures litter on roadsides and vacant property, around dumpsters, and behind commercial property — the major attractions for litter, Bickley says. "When the Cobb Clean Commission began, Cobb had a rating of 9.1 percent. The current rating is 2.8 percent."

The Cobb Clean Commission and the Solid Waste Department also have produced a program designed to educate elementary school children about proper waste management. Bickley says the program, "Where Does The Garbage Go?" will be shown in 34 elementary schools during the 1986-87 school year. "With this program, we try to get rid of the 'out of sight, out of mind' and litter is 'someone else's problem' attitudes," Bickley says. □



with certain aspects of waste management, such as refuse-to-energy, which have high risks and complex financial and technical considerations.

The much-touted cost efficiencies of the private sector did, however, come into question. About 60 percent of the sampling agree it has been overstated, and nearly half (49 percent) agree if a community is willing to take risks and manage well, it can handle solid waste problems internally and save money. And 74 percent agree competition from the private sector has made municipalities more competitive and businesslike.

Several panelists say the public sector has been hurt by cutbacks in financial support from federal and state sources. Further, some say public administrators want to be rid of the headaches of solid waste management. Finally, respondents agree the private sector has the advantage of being relatively removed from political influence.

Will the pendulum swing back?

Apparently not, say the respondents, since only 34 percent think once the public sector better understands the risks of waste-to-energy projects, there will be a significant shift to public sector management of resource-recovery projects.

As to whether increased reliance on the private sector has the potential for more graft and corruption, 57 percent say "no." In addition, only one-third agree the private sector is less concerned about environmental compliance than the public sector.

Some critics argue that because of the need for long-term maintenance and monitoring, landfills should be a public sector responsibility, but the Delphi panelists disagree with this premise by a two-to-one margin.

Despite their forecast of continued growth in private industry involvement, the respondents say there definitely is a

continuing role for the public sector in solid waste management. Moreover, the overwhelming majority (89 percent) agree the private sector should not be left to do the job alone, but should be partners with government.

When asked what functions should be retained by the public sector, the panelists concentrated on six:

- environmental regulation, monitoring and enforcement;
- administration of licensing and contracting arrangements;
- public education;
- monitoring of performance;
- planning and siting functions; and
- overall solid waste management.

Resource recovery

Two of the many types of waste-to-energy technologies proposed so far have found general acceptance: mass-burn and refuse-derived fuel (RDF). The former process, which thus far has been more successful in the marketplace, incinerates waste as-received, while RDF employs some form of waste sorting and processing.

Mass-burn facilities are basically furnaces lined with water-filled tubes that capture the heat of combustion and use it to generate steam, electricity, or both. RDF originally was intended to be sold to electrical utilities or industrial boiler plants, but lost credibility when early projects suffered breakdowns and failures.

Asked to judge the prospects of the two technologies, the panelists overwhelmingly agree mass-burn would continue to dominate the resource recovery market, and in subsequent responses indicate solid waste agencies lack confidence in the RDF concept based on past experience. In a political climate, failure cannot be accepted, one panelist observes.

The panelists do say RDF technology

will be improved in the future, especially simple RDF systems involving less processing. The possible air-quality control benefits of RDF, according to one panelist, may provide incentive for development of these facilities. Responses, however, are almost unanimous (94 percent) that dedicated boilers will be required to guarantee markets for the sale of RDF.

Other technologies are suggested as being promising, including residue conversion to construction materials, fluidized-bed combustion, composting, anaerobic digestion with sludge and low-BTU gasification.

What does the future hold?

In the area of solid waste collection, a large number of respondents predict more automation in an attempt to reduce labor costs. They also see continued refinements in collection equipment, such as the ability to collect source-separated wastes, use of smaller crews, or greater waste compaction.

Examining one of the major causes of solid waste problems — packaging materials — a large proportion of those sampled doubt any significant changes will occur to lessen the quantity of waste materials generated. Americans, they say, like the convenience and sanitary aspects of present packaging technology, and the use of packaging materials will continue to increase.

In contrast to other public works areas, such as water and wastewater management, the group says, by a ratio of about four-to-one, the level of training in solid waste management is currently inadequate. The panelists attribute this disparity to the fact the solid waste field is somewhat newer in terms of technical sophistication. Licensing agreements have restricted distribution of technical information, universities have not yet responded with suitable programs, and the field — unlike water and wastewater — has not received the support of federal policies.

The respondents do say, however, levels of training among all three areas eventually will be more equal.

On a tactical level, the panelists reveal an acceptance of the financial, political and public opinion realities that must be faced and are determined to adjust to them, while dealing with the industry's problems.

Strategically, even with their frequent division of opinion on many key issues, one point comes through loud and clear: both near and long term, industry leaders recognize the need for and will welcome continuing research and innovation. □

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MUNICIPAL COST INDEXES

The **Municipal Cost Index** for February rose half a point from last month, climbing to 341.4. The **Construction Cost Index**, **Consumer Price Index** and **Producer Price Index** also rose slightly in February. The **Producer Price Index**, however, still remains considerably lower than last year's figure.

In this month's marketbasket, products in the fuel and oil family continued to post losses. Price regulation changes in 1987, however, are predicted to drive oil and gas prices upward.

— Compiled by Joe Morris

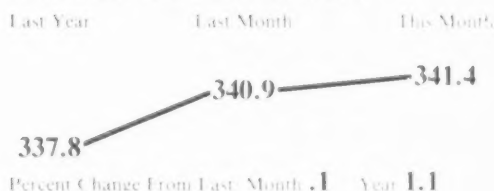
These figures are calculated on a base year of 1967.

THIS MONTH'S MARKETBASKET

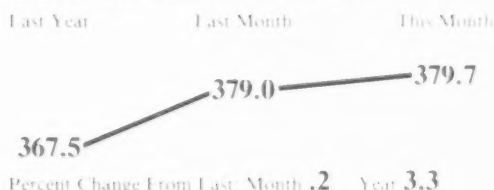
	Current Index	Percent Change From:	
		Last Month	Last Year
Air Conditioners	149.0	-.2	1.1
Apparel	185.3	-.1	1.2
Asphalt Roofing	375.2	.7	-8.3
Books	142.6	.4	4.7
Chemicals, Industrial	316.0	-.5	-6.1
Coal	535.0	-.3	-.5
Concrete Products	323.8	-.2	.1
Construction Machinery	369.8	.7	1.8
Diesel Fuel	340.0	1.5	-50.8
Electric Components	203.4	0	2.9
Electric Lamps	346.6	-.3	.3
Electric Power	448.4	-.7	-1.0
Engines, I.C.	353.8	0	2.0
Fans, Blowers	366.5	0.2	1.9
Fertilizers, Mixed	245.6	-.6	-4.5
Floor Coverings	196.7	.4	3.3
Flow Instruments	237.8	.2	2.1
Footwear	263.5	0	2.0
Foundry Products	361.6	0	.5
Fuel Oil No. 2	368.3	.3	-50.8
Furniture	320.8	0	2.3
Gasoline	311.6	.2	-45.2
Generator Sets	352.8	.1	.5
Glass	232.7	0	1.7
Glass Containers	401.6	.2	3.8
Gypsum Products	352.4	3.1	1.2
Hardware	304.9	-.6	-.8
Heating Equipment	271.4	-.2	3.7
HVAC Controls	131.4	1.2	3.3
LP Gas	296.9	-4.7	-47.8
Lubricants	350.6	-1.7	-4.4
Lumber	315.1	.4	4.8
Metal Fabrications	317.8	.5	1.0
Millwork	318.6	-.3	1.9
Motor Vehicle Parts	358.0	.1	.5
Mowers	263.7	0	.7
Natural Gas	1098.8	-1.4	-17.0
Office Machines	155.0	.2	.8
Paint	282.4	0	1.8
Paper	312.8	.7	4.0
Passenger Cars	249.4	-.2	6.3
Plumbing Fixtures	322.9	-.8	2.5
Plywood	235.2	-.5	2.4
Portland Cement	348.1	-1.2	-2.0
Residual Fuel	450.8	-.3	-49.1
Sand, Gravel	320.1	.4	3.1
Sanitary Papers	380.5	-.8	.1
Soaps, Detergents	274.3	.3	-.6
Sporting Goods	208.0	0	1.4
Steel Mill Products	350.4	-.2	-3.9
Struc. Clay Products	310.7	-.4	3.7
Switchgear	285.8	-.1	1.6
Tires, Tubes	230.9	-1.3	-2.1
Transformers	237.2	1.5	2.2
Trucks	347.8	-.1	3.8
Valves	107.3	-.1	1.8
Wire, Cable	204.8	-.3	-.4
Wiring Devices	379.8	.4	4.5

At-A-Glance Changes

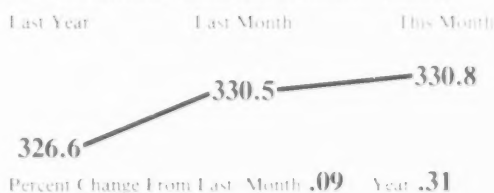
MUNICIPAL COST INDEX



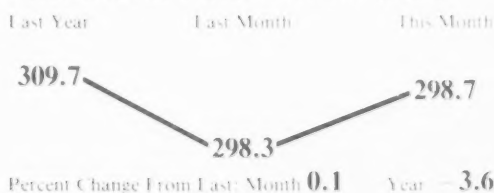
CONSTRUCTION COST INDEX



CONSUMER PRICE INDEX (BLS)



PRODUCER PRICE INDEX (BLS)



QUARTERLY MUNICIPAL TRENDS

	Current Level	Percent Change From:	
		Last Qtr.	Last Year
Receipts	611.6B	.5	6.9
Federal Grants	106.1B	-.7	5.9
Durable Purchases	22.8B	1.8	9.1
Consumables	36.6B	-.3	-5.4
Services	378.9B	1.9	7.8
Structures	66.4B	6.9	15.9
Salaries, Wages	302.9B	1.7	7.1
Surplus	59.0B	-15.7	-.3
Employment	13.711M	-.2	.5